

WHAT IS CLAIMED IS:

1. Data storage format for storing color image with extended gamut color values that is compatible with limited color gamut imaging systems

5 comprising:

a first section for storing the image in a limited gamut color space;

a second section for storing information identifying those regions within the image that have extended gamut color values;

a third section for storing the extended gamut data for regions that
10 are identified in the second section.

2. The data storage format described in claim 1, wherein the data stored in a first section of the data storage format is in a JFIF format.

15 3. The data storage format described in claim 1, wherein the data stored in a first section of the data storage format is in a TIFF format.

4. The data storage format described in claim 1, wherein the data stored in a third section of the data storage format is in a compressed format.

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5. The data storage format described in claim 4, wherein the image stored in a third section of the data storage format can be added to the data stored in a first section of the data storage format as a private tag.

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6. Method for storing image data of an original image having extended gamut color values comprising;

identifying regions within the original image that contain extended gamut color values;

5 using a compact notation to store an identification of the extended gamut regions in a second section of the data storage format;

gamut-mapping image data pertaining to the extended gamut regions to a limited gamut color space;

10 storing the gamut-mapped image data together with original image data not in an extended gamut region in a first section of the data storage format;

encoding image data for the extended gamut regions in an extended gamut color space;

storing image data for the extended gamut regions in a third section of the data storage format.

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7. The method described in claim 6, wherein technique used for the gamut mapping replaces color values for extended gamut pixels in the original image with limited gamut color values that come closest to the desired extended gamut color values.

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8. The method described in claim 6, wherein data stored in a third section of the data storage format is encoded in CIELAB color space.

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9. The method described in claim 8, wherein the encoding is in 16
bit fixed point.

10. The method described in claim 8, wherein the encoding is in 32
5 bit IEEE floating point.

11. The data storage format described in claim 6, wherein the data
stored in a third section of the data storage format is encoded using an extended
gamut RGB color space.

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12. The method described in claim 6, wherein the image data stored
in a first section of the data storage format is compatible with legacy devices that
have a limited color gamut.

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13. The method described in claim 6, wherein the data stored in a
first and third sections of the data storage format are combined in order to
reconstruct an extended gamut image.

14. The data storage format described in claim 6, wherein the data
20 in a second section of the data storage format corresponds to rectangular areas.

15. Method for using data stored in data storage format including a
first section for storing the image in a limited gamut color space, a second section
for storing information identifying those regions within the image that have

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extended gamut color values, and a third section for storing the extended gamut data for regions that are identified in the second section, comprising:

utilizing image data stored in a first section of the data storage format in connection with limited gamut image processing devices;

5 utilizing image data stored in all three sections of the data storage format in connection with color image processing devices which are compatible with extended gamut data.

16. The method defined in claim 15, wherein the extended gamut data stored in a third section of the data storage format is attached to the data stored in a first section of the data storage format as a private tag.

17. The method defined in claim 15, wherein the private tag is ignored by a legacy device that is incompatible with extended gamut image data.

18. The method defined in claim 17, wherein the private tag and the data stored in a first section of the data storage format are utilized by a device that is compatible with extended gamut image data.